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Z90 & Z91 Assembly Instructions and Parts Envelopes
Corrections and Additions
04 November 2006

Please check http://www.cliftonlaboratories.com/construction_updates.htm for revisions and recommendations developed after printing this document.

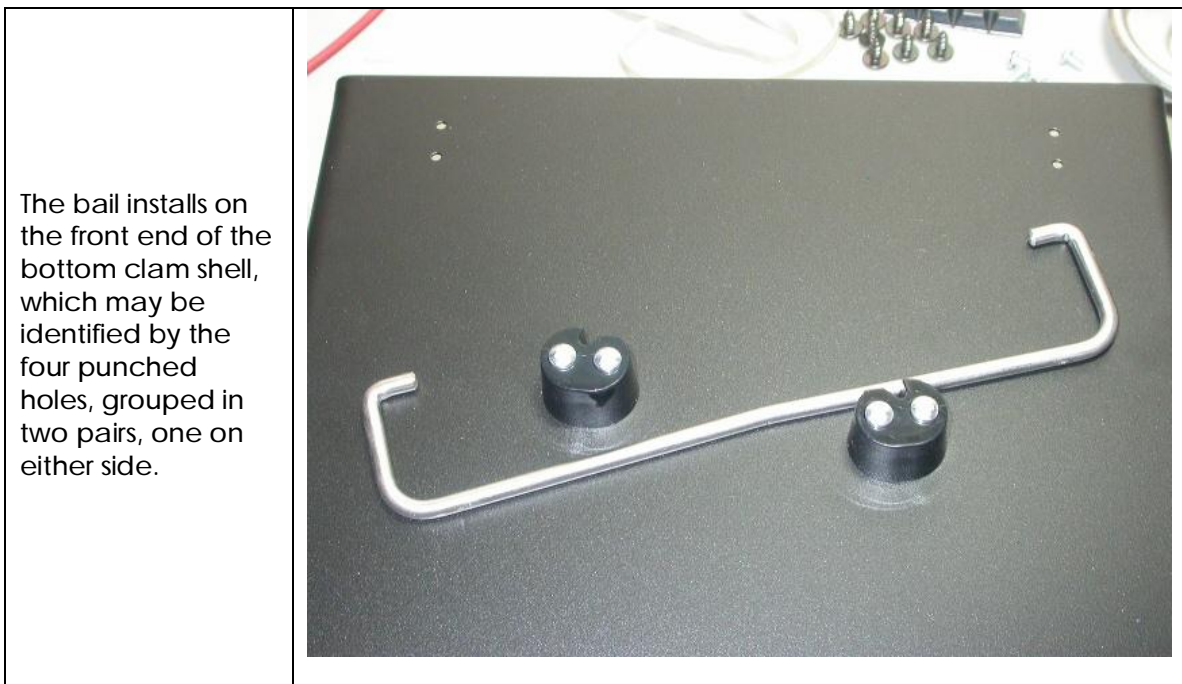
1. Z91 Envelope for Z91 Stage 2X. Parts list fails to include insert pins quantity 3 for the female connector housing.
2. Z90 Stage 1 Heatsinks & Fuses. The Stage 1 parts bag contains one small slip-on heat sink, with instructions that it is to be installed on U501 when the PCB is mounted in the enclosure. Instead, use this small slip-on heat sink for U506. Bend the heat sink's tab at 90 degrees, or clip it off as you prefer. This heat sink is installed with the tab towards the PCB. Install the separately packaged Stage 1 addendum large heat sink on U501 when the PCB is checked out and the CCFL inverter is installed. The Stage 1 parts bag also identifies F501 as a 1.25A picofuse, in quantity two. This is incorrect as F501 is now a 1.1A polyfuse. The manual has been revised to reflect this change, but the parts bag label is incorrect.
3. Z90 & Z91 BNC Protective Caps. Included in the Hardware Bag are two soft vinyl caps that may be slipped over the Z90's BNC connectors when not in use.
4. Z90 & Z91 Caution When Handling Tinplate Shield and Chassis Pan. Be careful when handling either the tinplate shield or the chassis pan, as both may have small metal slivers or burrs. Use sandpaper or a small file to clean up any sharp edges or holes.
5. Z90 & Z91 Extra Jackscrew Hardware. The Hardware Bag includes lock washers, flat washers and nuts for the jackscrews, as these are part of the standard jackscrew hardware set. These parts are not used in the Z90.
6. Z91 Hardware Bag. The 4-40 screws are 3/16" inch long not 1/4" as indicated on the label.
7. Z91 Stage 1 Addendum. Contains a small heat sink for U506. To install, bend the tab at 90 degrees to the heat sink body and slip the heatsink over U506, tab towards the PCB. To reduce the chance of damaging U506, do not install the heat sink until the PCB is ready to be installed in the enclosure.
8. Z90 & Z91 Serial Number Tags. Attached are three serial number tags. I suggest that you apply one to the PCB when finished and one on the rear panel of your Z90 or Z91, or if you prefer, to the bottom of the lower enclosure shell. Retain the third tag to use with the replacement rear panel.
9. Z90 & Z91. Stage 6, Crystal Filter. I have previously recommended mounting the eight 8 MHz crystals X301...X308 approximately 1/16" (1.5mm) above the PCB surface. After discussion with Bob, K7HBG, I have decided that the builder should

feel free to mount X301...X308 flush with the PCB, as the solder mask provides adequate insulation of traces that might come in contact with the crystal holder.

The method of grounding the crystal holders illustrated in the manual involves running separate horizontal ground busses for the 200 Hz and 1000 Hz filters and connecting them via a vertical connection to ground pads. Bob suggests that builders might wish to consider following an Elecraft K2 modification to its crystal filters, involving soldering the base of the crystal holder to the PCB ground plane instead of a wire buss arrangement. This will require removing the solder masking near each crystal to expose the ground plane for a large enough area to permit a short solder connection to be applied. If you plan to use this grounding approach, you might also reverse the installation order and install the crystals first, before the other Stage 6 components so as to provide better access to the PCB and the crystal bases.

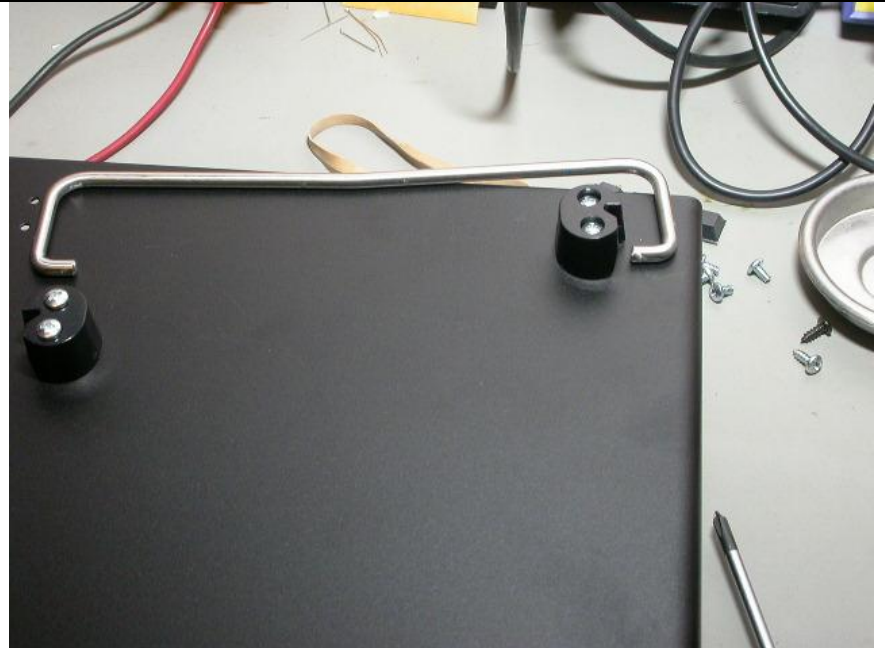
Although I agree with the potential merit in Bob's suggestion, I will leave it up to individual builders to decide whether they wish to make this modification as I have not tested it.

10. Z90 Only. Installing the bail. Stan, W5EWA, has provided the following instructions (and photographs) detailing how to install the TenTec bail kit included with your Z90. (A bail kit is not included with a Z91). Note that the bottom clam shell may be identified by the small holes punched in it. (The top clam shell has no holes.)



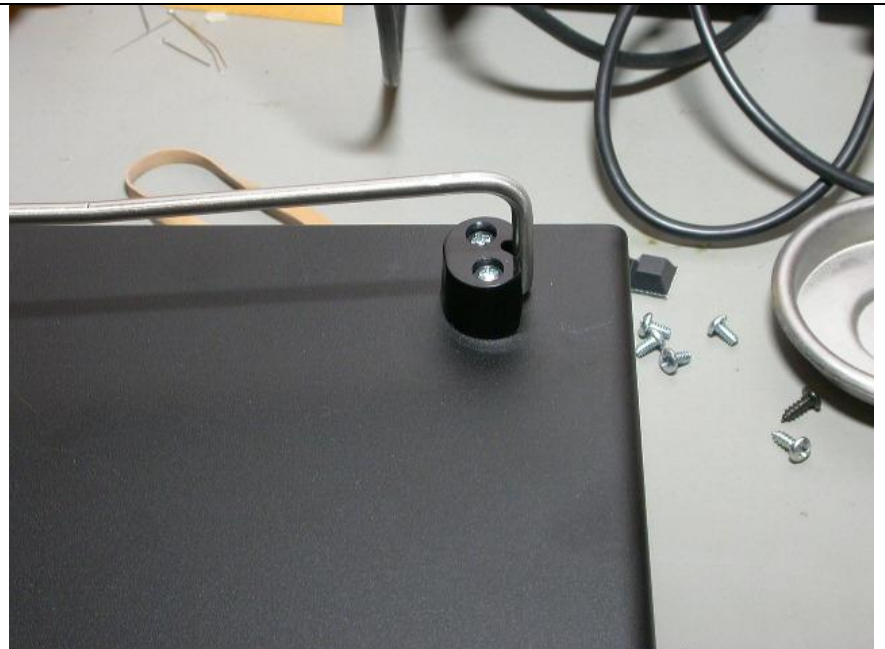
I am including pictures of the front bail assembly, in case there are any questions about how it goes together. These things can be a source of confusion for the un-initiated. The first one I ever installed on my Elecraft K2 had me somewhat confused.

The first foot goes on with the screws not quite tight, then slip one end of the bail under that foot.



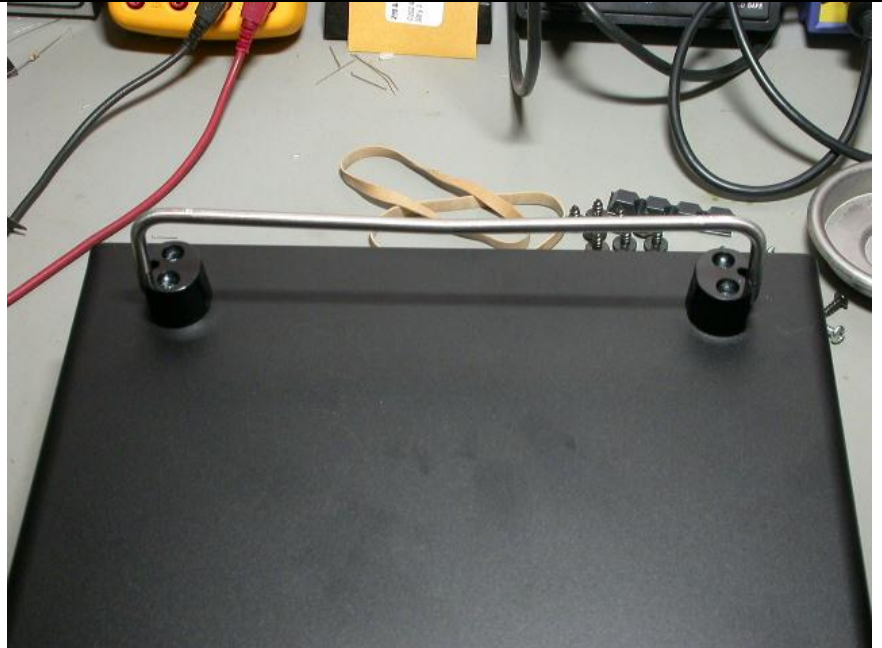
Be sure and install the feet with the bail in the down (or deployed) position as it places much less stress on the feet when trying to install the screws.

Make sure it is pushed in all the way under the foot.

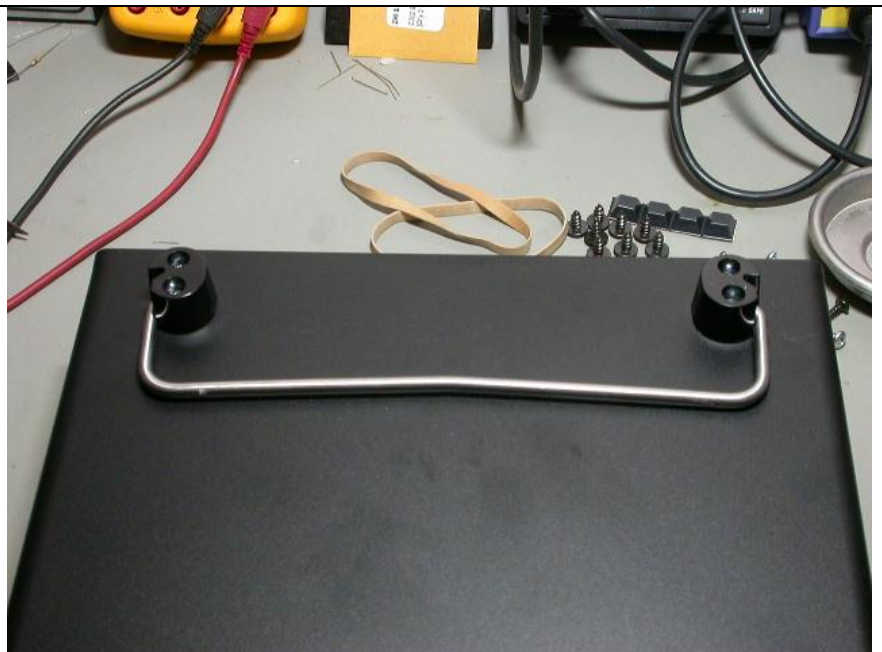


Note the orientation of the two feet—the notches point outward, away from each other.

Have the bail in the deployed as shown in the photograph and then place the other foot on top of the bail's other end while lining the holes up for the screws. It should line up fairly easy and the screws should start with a minimum of effort.



Tighten down all four screws. This photo shows the bail stowed position.



One thing...these screws go in hard, so be sure you have them all the way in the bottom cabinet. A larger than normal Phillips screwdriver will aid in getting the screws seated all the way. They will protrude through the bottom of the cabinet about 3 or 4 threads or so.

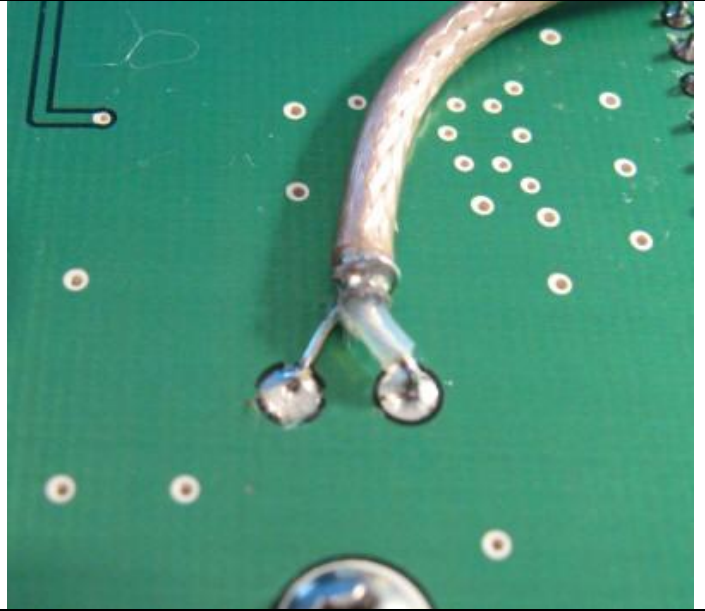
Z90 & Z91 Coax Cable Preparation. Stage 7 requires you to prepare a short jumper from Teflon coaxial cable. The Assembly Instructions recommends fanning out the braid and

soldering it to the ground pads on both ends. Although this works, it's on the ugly side. Bob, K7HBG, has provided an excellent alternative procedure. The next Assembly Instructions printing will incorporate Bob's method.

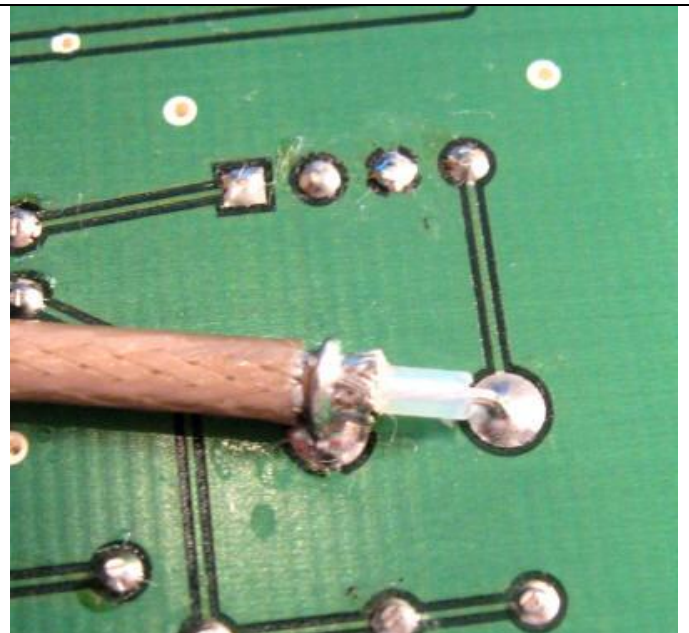
Here's Bob's description and illustration of coax preparation.

Here is how I prepared the ends of the coax for installation.

I stripped the outer jacket back a bit and formed a loop of wire around the shield. I then lightly soldered the wire loop to the braid and gently cut off the extra shield.



The coax can be attached close to the PCB with a short connection



- Ø The photograph shows Bob's cable installed.

- Ø It is preferable to "flip" Bob's routing, so that the cable rests over the microprocessor and digital section of the PCB, i.e., the bottom portion of the PCB in this photo. In other words, the cable should be routed near the 40-pin DIP socket visible at the bottom of the photo.

